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(54) [Title of Invention]

POLYCARBONATE RESIN COMPOSITION

(51) [International Patent Classification, 6th Edition]

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C08G 64/18 NQA

C08K 5/521 KKM

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Abstract

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(74) [Attorney(s) Representing All Applicants]

[Patent Attorney]

[Name]

Hasegawa Koji

(57) [Abstract]

[Problems to be Solved by the Invention]

It is superior in flame resistance, mechanical*thermal property, it offers polycarbonate resin composition which at sametime is superior in external appearance.

[Means to Solve the Problems]

polycarbonate resin composition* where it consists of polycarbonate resin1~99weight% and polycarbonate-organopolysiloxane copolymer99~1weight% and content of silicon combines polytetrafluoroethylene0.2~2 parts by weight which possesses phosphate ester-based compound0.1~5parts by weight and the fibril-forming ability and vis-a-vis polycarbonate resin100parts by weight under 0.5 weight%, becomes

It is superior in flame resistance, mechanical*thermal property, it offers polycarbonate resin composition which at sametime is superior in external appearance.

[Means to Solve the Problems]

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Claims

[Claim(s)]

[Claim 1]

polycarbonate resin composition* where it consists of (A) polycarbonate resin1~99weight% and (B) polycarbonate-organopolysiloxane copolymer99~1weight% and the content of silicon combines (C) phosphate ester-based compound0.1~5parts by weight and polytetrafluoroethylene0.2~2 parts by weight which possesses(D) fibril-forming ability vis-a-vis polycarbonate resin100parts by weight under 0.5 weight%, becomes

[Claim(s)]

[Claim 1]

polycarbonate resin composition* where it consists of (A) polycarbonate resin1~99weight% and (B) polycarbonate-organopolysiloxane copolymer99~1weight% and the content of silicon combines (C) phosphate ester-based compound0.1~5parts by weight and polytetrafluoroethylene0.2~2 parts by weight which possesses(D) fibril-forming ability vis-a-vis polycarbonate resin100parts by weight under 0.5 weight%, becomes

[Claim 2]

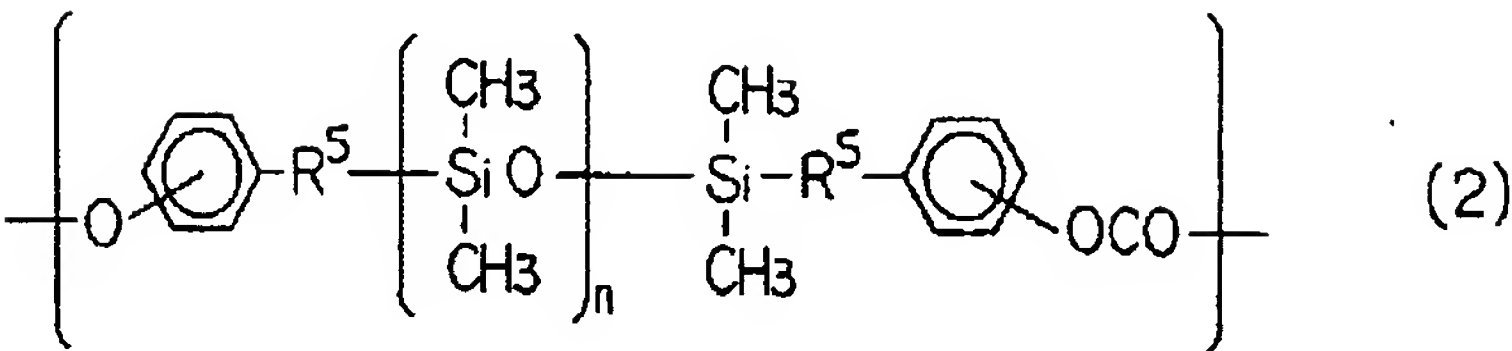
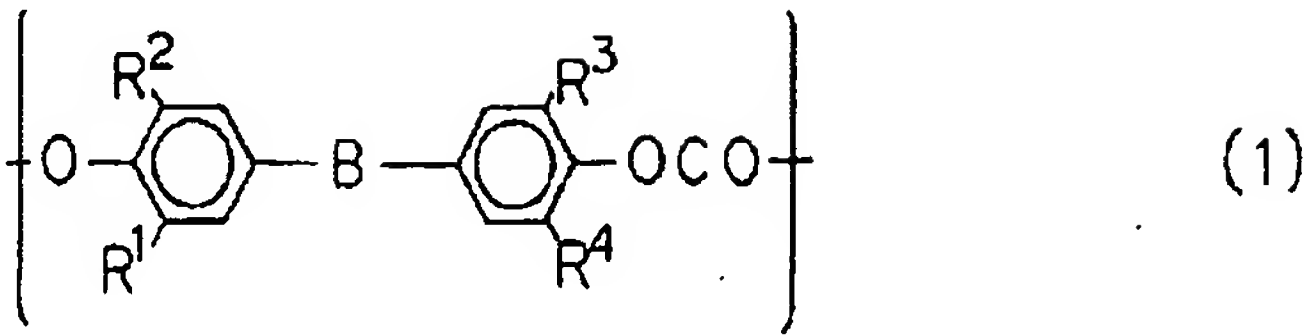
(B) polycarbonate-organopolysiloxane copolymer, is polycarbonate-organopolysiloxane copolymer which possesses structural unit which isdisplayed with below-mentioned Formula (1) and structural unit which isdisplayed with below-mentioned Formula (2) and polycarbonate resin composition* which isstated in Claim 1 which is made feature

[Claim 2]

(B) polycarbonate-organopolysiloxane copolymer, is polycarbonate-organopolysiloxane copolymer which possesses structural unit which isdisplayed with below-mentioned Formula (1) and structural unit which isdisplayed with below-mentioned Formula (2) and polycarbonate resin composition* which isstated in Claim 1 which is made feature

[Chemical Formula 1]

[Chemical Formula 1]



(1) B 1~10
-O-, -S-, -CO-, -SO₂-
R¹ R² R³ R⁴
1~4
(2) R⁵
1 2~6
n 1~200

(In Formula (1), straight chain, branched chain of carbon number1~10 or alkylidene group, aryl substituted alkylene group, allylene group, -O-, -S-, -CO- of cyclic or-SO₂- it shows B, alkylene group of carbon number2~6 which carbon atom where R¹, R², R³ and R⁴, respectively, show alkyl group of the hydrogen, halogen or carbon number1~4, in Formula (2), as for R⁵, aromatic group and direct bond have done has connected with hydrogen atom of at least one showing, n shows integer 1 - 200.)

3
100
c
d 1
2

[Claim 3]
It confronts polycarbonate resin100parts by weight, relative cparts by weight of phosphate ester-based compound and therelative dparts by weight of polytetrafluoroethylene which possesses fibril-forming ability, satisfybelow-mentioned formula polycarbonate resin composition* which is stated in Claim 1 or 2 which is made feature

0.
5<=cXd<2

0.
5 <= cXd*2

Specification

0001

[Description of the Invention]
[0001]
[Technological Field of Invention]
this invention regards polycarbonate resin composition, furthermore details regard polycarbonate resin composition of flame resistance which is superior in mechanical*thermal

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property and external appearance.

[0002]

[Prior Art]

polycarbonate resin has had mechanical*thermal property which is superior, is widely utilized in industrially including automobile field, OAEquipment field, electrical and electronics fields.

On one hand, multiple flame retardant development and investigation is done in order recently, OAEquipment, household appliance product or other application demand of flame retardation of synthetic resin material which is used for center, isstrong, to answer to these demands.

Usually, halogen compound etc is combined mainly in flame retardation of polycarbonate resin,furthermore antimony trioxide etc is jointly used is many as the flame retardant auxiliary agent.

But, when halogen compound is combined to synthetic resin as flame retardant, there is apossibility of causing environmental contamination at time of fire generation or timeof incineration.

In addition, polycarbonate resin original mechanical property which is superior is impaired,color change when forming, furthermore, property decrease when youuse for long period with high temperature and coloration or other problem has possessed.

Because of this quantity reduction of halogen compound which is used for flame resistance resin isdesired.

[0003]

composition which combines aromatic oligomer phosphate ester to aromatic polycarbonate resin or other thermoplastic resin is disclosed in Japan Unexamined Patent Publication Showa59-202240disclosure, but in order to obtain flame resistance which is superior, it isnecessary relatively to add aromatic oligomer phosphate ester to large amount, there is a problem that mechanical*thermal property is impaired.

In addition but, ABS type resin blending to polycarbonate resin, we to have done theattempt which it tries to improve fluidity etc, furthermore theattempt which combines phosphate ester-based compound for flame resistance improvement has done, asfor polycarbonate resin composition which combines ABS type resin and phosphate ester-based compound, heat resistance being insufficient, There is a problem that use with application where high heat resistance isrequired is restricted.

[0004]

By fact that polycarbonate-organopolysiloxane copolymer is

55-160052 61-215652 7-150028

[0005]

[Problems to be Solved by the Invention]

It is to offer polycarbonate resin composition where objective of this invention is superior in flame resistance, impact resistance, heat resistance, at same time is superior in molding external appearance and stiffness.

[0006]

[Means to Solve the Problems]

As for this invention, being something which can be made in order to solve above-mentioned problem, gist consists of (A) polycarbonate resin 1~99 weight% and the (B) polycarbonate-organopolysiloxane copolymer 99~1 weight% and content of silicon combines (C) phosphate ester-based compound 0.1~5 parts by weight and the polytetrafluoroethylene 0.2~2 parts by weight which possesses (D) fibril-forming ability vis-a-vis polycarbonate resin 100 parts by weight under 0.5 weight%, exists in polycarbonate resin composition which becomes.

[0007]

You explain in detail below, concerning this invention.

As dihydric phenol and carbonate precursor reacting with solution method or melt method, it is something which is produced as (A) polycarbonate resin in this invention.

As dihydric phenol, 2 and 2-bis (4-hydroxyphenyl) propane [bisphenol A], you can list bis (4-hydroxyphenyl) methane, 1,1-bis (4-hydroxyphenyl) ethane, 2,2-bis (4-hydroxy-3,5-dimethylphenyl) propane, 2,2-bis (4-hydroxy-3-methylphenyl) propane, bis (4-hydroxyphenyl) sulfide, bis (4-hydroxyphenyl) sulfone, etc preferably bis (4-hydroxyphenyl) alkane system, you can list those which designate especially bisphenol A as main raw material.

As carbonate precursor, you can list carbonyl halide, carbonyl ester or haloformate, etc can list the di haloformate and mixture of those of preferably phosgene, diphenyl carbonate, bivalent phenol.

When polycarbonate resin is produced, mixing alone or 2

combined to polycarbonate resin, improvement method of the impact resistance, is disclosed in Japan Unexamined Patent Publication Showa55-160052 number and Japan Unexamined Patent Publication Showa61-215652 disclosure etc, in addition although, in polycarbonate resin, polycarbonate blend which possesses siloxane copolymer and the phosphorus-containing compound is disclosed in Japan Unexamined Patent Publication Hei 7-150028 disclosure, is superior in impact resistance, flame resistance, in the external appearance of molded article or point of stiffness it was not something which always it can be satisfied.

[0005]

[Problems to be Solved by the Invention]

It is to offer polycarbonate resin composition where objective of this invention is superior in flame resistance, impact resistance, heat resistance, at same time is superior in molding external appearance and stiffness.

[0006]

[Means to Solve the Problems]

As for this invention, being something which can be made in order to solve above-mentioned problem, gist consists of (A) polycarbonate resin 1~99 weight% and the (B) polycarbonate-organopolysiloxane copolymer 99~1 weight% and content of silicon combines (C) phosphate ester-based compound 0.1~5 parts by weight and the polytetrafluoroethylene 0.2~2 parts by weight which possesses (D) fibril-forming ability vis-a-vis polycarbonate resin 100 parts by weight under 0.5 weight%, exists in polycarbonate resin composition which becomes.

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As carbonate precursor, you can list carbonyl halide, carbonyl ester or haloformate, etc can list the di haloformate and mixture of those of preferably phosgene, diphenyl carbonate, bivalent phenol.

When polycarbonate resin is produced, mixing alone or 2

kinds or more, it can also use theaforementioned dihydric phenol.

[0008]

When polycarbonate resin is produced, it is possible also to make branched polycarbonate, furthermore making use of branching agent they are 0.01, - 3 mole %, preferably 0.1~1.0 mole % vis-a-vis above-mentioned bivalent phenol compound as quantity of branching agent.

As branching agent, fluoroglycine, 2,6-dimethyl-2,4,6-tri (4 -hydroxyphenyl) heptene-3, 4,6-dimethyl-2,4,6-tri (4 -hydroxyphenyl) heptene-2, 1,3,5-tri (2 -hydroxyphenyl) benzol, 1,1,1-tri (4 -hydroxyphenyl) ethane, 2,6-bis (2 -hydroxy-5-methylbenzyl) - 4-methyl phenol, the;al, the;al ' and;al "-tri (4 -hydroxyphenyl) - polyhydroxy compound, and 3 and 3 -bis where it is illustrated with 1, 3 and 5 -tri isopropyl benzene etc (4 -hydroxy aryl) oxy indole (=isatin bisphenol), 5-chloro isatin, 5,7-dichlor isatin, 5-bromo isatin etc are illustrated.

[0009]

molecular weight of polycarbonate resin, with viscosity average molecular weight which is converted, with 10,000-100,000, is point more preferably 150,000~60,000 of moldability and molded article property from the solution viscosity which was measured with temperature 25 deg C making use of methylene chloride as the solvent.

When polycarbonate resin which has these viscosity average molecular weight is produced, it is possible also to add catalyst etc in order to promote suitable molecular weight regulator, reaction.

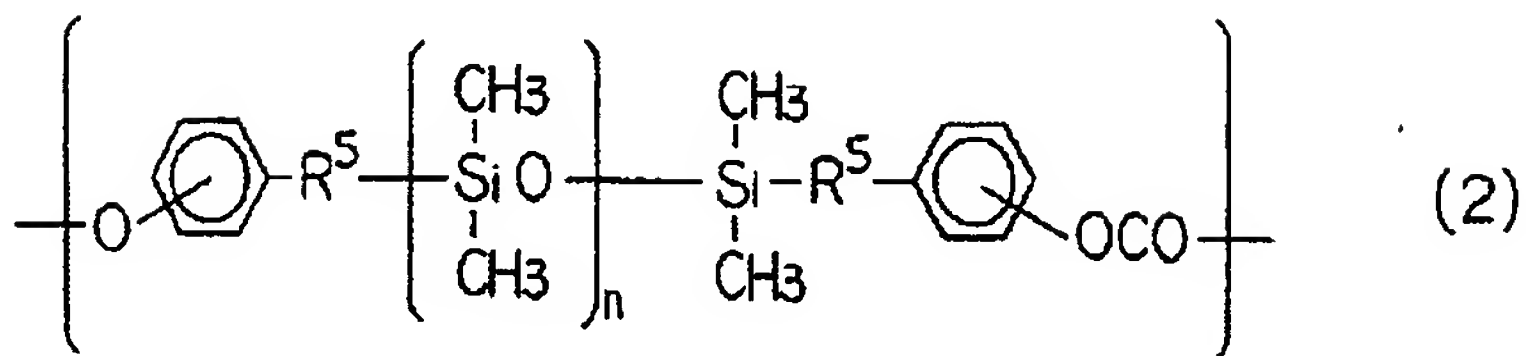
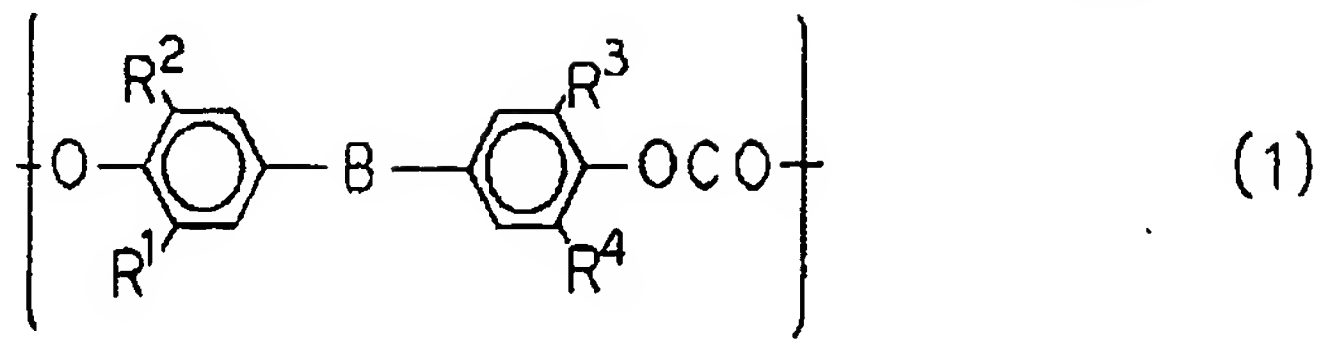
[0010]

It is a copolymer which possesses block which was induced from the block and diorgano siloxane which were induced from aromatic polycarbonate as (B) polycarbonate-organopolysiloxane copolymer in this invention.

As polycarbonate-organopolysiloxane copolymer, it adjusts block which was induced from diorgano siloxane which consists of structural unit which is displayed with polycarbonate block and the Formula (2) which consist of structural unit to which for example Japan Unexamined Patent Publication Showa50-29695 number and the Japan Unexamined Patent Publication Hei 3-292359 number, copolymer which is disclosed in Japan Unexamined Patent Publication Hei 4-202466 number each disclosure is listed, is displayed with preferably, Formula (1) in molecule and it can list block copolymer which it possesses.

[0011]

[Chemical Formula 2]



[0012]

In Formula (1), straight chain, branched chain of carbon number 1~10 or alkylidene group, aryl substituted alkylene group, aryl substituted alkylene group, allylene group, -O-, -S-, -CO- of cyclic or -SO₂- it shows B.

R^1 , R^2 , R^3 and R^4 , respectively, show alkyl group of hydrogen, halogen or carbon number 1~4.

In Formula (2), R⁵ aromatic group and shows alkylene group of carbon number 2~6 which carbon atom which direct bond has been done has connected with the hydrogen atom of at least one, concretely, can list ethylene, propylene, butylene, pentylene, hexylene or other group.

repeat number of siloxane unit in Formula (2) is integer 1 - 200.

When n is under 1, improvement effect of impact resistance being insufficient, when it exceeds 200, fluidity is easy to decrease.

n is integer of preferably 5~100 from point of balance of the impact resistance and fluidity.

[0013]

It is a preferably 2~40 weight%, more preferably 3~25 weight% as ratio of structural unit which is displayed with Formula (2) in polycarbonate-organopolysiloxane copolymer.

As polycarbonate-organopolysiloxane copolymer, produces

with known method to be possible, you can list method which is stated in aforementioned Japanese Patent Publication as this method.

As manufacturing method of namely, polycarbonate-organopolysiloxane copolymer, other than thing which replaces to the silanized bisphenol which forms structural unit which is displayed portion of the dihydric phenol, with Formula (2) in manufacturing method of aforementioned (A) polycarbonate resin, you can list completely similar method.

silanized bisphenol -O- group and -OCO- group where it has connected to benzene nucleus of the both ends of Formula (2) changed in each case into hydroxy group, with the dihydric phenol, bond position of hydroxy group to whichever location of o-, m- or the p- may be -R⁵- vis-a-vis basis.

[0014]

structural unit which is displayed with Formula (2) is formed, phenol, preferably, vinyl phenol, isopropenyl phenol etc which possesses unsaturated carbon-carbon bond of olefinic as above-mentioned silanized bisphenol, in end of polysiloxane chain which possesses predetermined degree of polymerization (n), can be produced hydrosilation by reacting.

[0015]

Regarding to this invention, polycarbonate resin consists of (A) polycarbonate resin and (B) polycarbonate-polyorganosiloxane copolymer.

As ratio of (A) polycarbonate resin and (B) polycarbonate-polyorganosiloxane copolymer, (A):(B) = 1:99~99:1 or 99-99: at 1, preferably (A):(B) = 30:70-99:1 is with weight ratio.

[0016]

content of silicon in polycarbonate resin is under 0.5 weight%.

0.5 When it is a weight% or more, because external appearance of molded article deteriorates, it is not desirable.

content of silicon is under preferably 0.01 weight% or more 0.5 weight%.

silicon amount, under 0.01 weight%, improvement effect of impact resistance is insufficient.

content of silicon, from point of balance of impact resistance and the molding external appearance, is more preferably, 0.05~0.4 weight%.

[0017]

You can list phosphate ester-based compound which is shown

with known method to be possible, you can list method which is stated in aforementioned Japanese Patent Publication as this method.

As manufacturing method of namely, polycarbonate-organopolysiloxane copolymer, other than thing which replaces to the silanized bisphenol which forms structural unit which is displayed portion of the dihydric phenol, with Formula (2) in manufacturing method of aforementioned (A) polycarbonate resin, you can list completely similar method.

silanized bisphenol -O- group and -OCO- group where it has connected to benzene nucleus of the both ends of Formula (2) changed in each case into hydroxy group, with the dihydric phenol, bond position of hydroxy group to whichever location of o-, m- or the p- may be -R⁵- vis-a-vis basis.

[0014]

structural unit which is displayed with Formula (2) is formed, phenol, preferably, vinyl phenol, isopropenyl phenol etc which possesses unsaturated carbon-carbon bond of olefinic as above-mentioned silanized bisphenol, in end of polysiloxane chain which possesses predetermined degree of polymerization (n), can be produced hydrosilation by reacting.

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[0016]

content of silicon in polycarbonate resin is under 0.5 weight%.

0.5 When it is a weight% or more, because external appearance of molded article deteriorates, it is not desirable.

content of silicon is under preferably 0.01 weight% or more 0.5 weight%.

silicon amount, under 0.01 weight%, improvement effect of impact resistance is insufficient.

content of silicon, from point of balance of impact resistance and the molding external appearance, is more preferably, 0.05~0.4 weight%.

[0017]

You can list phosphate ester-based compound which is shown

with Formula (3) as (C) phosphate ester-based compound in this invention, but it is not something which is limited in these.

[0018]

[Chemical Formula 3]



[0019]

In Formula (3), R⁶, R⁷, R⁸ and R⁹, respectively, display the hydrogen atom or organic group, but R⁶, R⁷, R⁸ and R⁹ case where in eachcase is a H is excluded.

As organic group, you can list optionally substitutable, alkyl group, cycloalkyl group and aryl group etc.

When it is substituted, you can list for example alkyl group, alkoxy group, alkyl thio group, halogen, aryl group, aryloxy group, aryl thio group and halogenated aryl group etc as substituent, these substituent combined group (for example aryl alkoxy alkyl group etc) or you connect these substituent with oxygen atom, sulfur atom, nitrogen atom and etc are good even with combined group (for example aryl sulfonyl aryl group etc).

[0020]

X displays organic group of bivalent or greater, means basis of the bivalent or greater which it is possible organic group of bivalent or greater excluding one or more of hydrogen atom which from above-mentioned organic group has been connected to carbon atom can list group which is induced from for example alkylene group, (substituted) phenylene group, polynuclear phenol for example bisphenols, relative position of separation atomic valency of 2 or more is the option.

Especially, you can list hydroquinone, resorcinol, diphenylol methane, diphenylol dimethyl methane, dihydroxy biphenyl, p,p*-dihydroxy diphenylsulfone, dihydroxy naphthalene etc as desirable ones.

As for p with 0 or 1, as for q with integer of the integer, preferably 1~30 of 1 or more, as for r integer of integer, preferably 1~10 of 0 or greater is displayed.

However, when $r \neq 0$ is, at least one inside $R^{(6)}$,

□□□□□□□□

□0021□

[illegible]

2

□0022□

[illegible]

0.1

0.5~4

□0023□

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00000ASTM 00000 3 000000000000
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□0024□

(A) _____
_____ - _____
100

R⁸ and R⁹ displays organic group.

[0021]

As embodiment of phosphate ester-based compound, trimethyl phosphate, triethyl phosphate, tributyl phosphate, trioctyl phosphate, tributoxy ethyl phosphate, triphenyl phosphate, tricresyl phosphate, cresyl biphenyl phosphate, octyl biphenyl phosphate, diisopropyl phenyl phosphate, tris (chloroethyl) phosphate, tris (dichloropropyl) phosphate, tris (chloropropyl) phosphate, bis (2 and 3 -dibromopropyl) - 2and 3 -dichloropropyl phosphate, tris (2 and 3 -dibromopropyl) and alkoxy for example methoxy, ethoxy and bisphenol A bis phosphate, hydroquinone bis phosphate, resorcinol bis phosphate, tri oxy benzene triphosphate etc of place where it is a propoxy, or preferably (substituted) phenoxy for example phenoxy, methyl (substituted) phenoxy you can list bis (chloropropyl) mono octyl phosphate, R5~R8, it is a preferably triphenyl phosphate and various bis phosphate.

It is good using these with alone and, 2 kinds or more combining, it is good using.

[0022]

As ratio of phosphate ester-based compound, they are 0.1 - 5 parts by weight vis-a-vis (A) polycarbonate resin and polycarbonate resin 100 parts by weight which consists of (B) polycarbonate-organopolysiloxane copolymer.

0.1 Under parts by weight flame resistance being insufficient, when it exceeds 5 parts by weight, heat resistance is easy to decrease.

From point of balance of flame resistance and heat resistance, ratio of the phosphate ester-based compound is preferably 0.5~4 parts by weight.

[0023]

With ASTM standard classification it is done in type3 as polytetrafluoroethylene which possesses (D) fibril-forming ability in this invention, disperses in polymer easily, at same time connecting polymer, it is a compound which shows the tendency which makes fibrous material.

As polytetrafluoroethylene which possesses fibril-forming ability, we can be marketed from the for example Dupont-Mitsui Fluorochemicals Ltd., as Teflon6J or Teflon30J, or as Polyflon from Daikin Industries, Ltd., canprocure easily.

[0024]

They are 0.2 - 2 parts by weight vis-a-vis (A) polycarbonate resin and polycarbonate resin 100 parts by weight which consists of (B) polycarbonate-organopolysiloxane copolymer as ratio of polytetrafluoroethylene which possesses

0.2~2 □□□□□□□

[illegible]

0.3~1

□0025□



□□□□□□□□□□□□□□□□ 100 □□□□□□□□□□
 □□□□□□□□□□ c □□□□□□□□□□□□□□□□□
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□0026□

00 10

$$0.5 \times c \times d \times 2$$

□0027□

$\text{cxd} \approx 0.5$  $\text{cxd} \approx 2$ 

□0028□

V

[illegible]

V

2

□0029□

[illegible]

the fibril-forming ability.

Ratio of polytetrafluoroethylene which possesses fibril-forming ability, under 0.2 parts by weight the melt dripping preventing effect when burning being insufficient, when it exceeds 2 parts by weight, external appearance is easy to become bad.

From point of balance of melt dripping preventing effect and external appearance, ratio of the polytetrafluoroethylene which possesses fibril-forming ability is preferably 0.3~1 part by weight.

[0025]

Regarding to this invention, it confronts polycarbonate resin 100 parts by weight, relative c parts by weight of phosphate ester-based compound and relative d parts by weight of polytetrafluoroethylene which possesses the fibril-forming ability, below-mentioned formula is satisfied, is more desirable than point of flame resistance, heat resistance, impact resistance.

[0026]

[Mathematical Formula 1]

$$0.5 \leq cXd^2$$

[0027]

cXd is easy to decrease under 0.5, flame resistance being insufficient,when cXd exceeds 2, heat resistance and impact resistance.

[0028]

Mixing above-mentioned each component with mixer a tumbler, V type blender, Nauter mixer, Banbury mixer, kneading roll, extruder or other way, it can produce polycarbonate resin composition of this invention.

At time of producing polycarbonate resin composition of this invention, as for order of mixing method, mixture of each component there are not times when especially it is limited.

It makes preferred method and, it mixes all components beforehand with tumbler, V type blender etc, with extruder it is a method which melting and mixing is done in the uniform, but either using method which mixes remaining to blend of 2 kinds or more in these component according to geometry of component does not become inconvenient.

[0029]

In range which does not impair effect of this invention, flame retardant etc of various additive, for example stabilizer, mold release, ultraviolet absorber, dye and pigment, inorganic filler, other public knowledge of quantity which that effect reveals can be contained in polycarbonate resin composition of

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(1)□□□

UL □□ 94 □□□□□□□□ 1/16" □□□□□□□□□□ UL
 □□ 94 □ 20mm □□□□□□□□□□□□

(2)□□□□

UL □□ 94 □ 20mm □□□□□□□□□□ 5 □□□□□□ 10
 □□□□□□□□□□□□□□□□□□□□□□

□0031□

(3)□□□□□□□

ASTM □□ D-648 □□□□□□□□□□□□□□
 1820kPa □□□□ ASTM D-648 □□□□□□□□

□□□□□□□□ deg C □□□□□□□□□□

(4)□□□□□□□□□

ASTM □□ D-256 □□□□□□□□□□□□□□
 ASTMD-256 □ 1/8" □□□□□□□□□□□□

□□□□□□□□□□ kg/cm/cm □□□□□□□□□

(5)□□

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this invention.

Being easily molding and fabrication possible with extrusion molding, injection molding, compression molding or other method, in addition be able to apply to also blow molding, vacuum forming, gas injection molding etc, you can use polycarbonate resin composition of this invention, for ideal as material of electronic and electric appliances, OA equipment or other housing or sash application, various part where flame resistance which is superior is required.

[0030]

[Working Example(s)]

Below, this invention furthermore is explained in detail with Working Example, but if this invention does not exceed gist, it is not something which is limited in Working Example below.

Section in Working Example below displays parts by weight entirely.

property evaluation did test piece from resin composition pellet with protocol after and below forming.

(1) flammability

Following to UL standard 94, it executed 20 mm vertical combustion test of UL standard 94 making use of test piece of 1/16 inch thickness which it drew up.

(2) burning time

In 20 mm vertical combustion test of UL standard 94, 5 sample, namely total burning time of 10 times fire contact later, were indicated with unit of second.

[0031]

(3) heat distortion temperature

Following to ASTM standard D-648, it executed test of ASTM D-648 in 1820 kPa making use of test piece which it drew up.

It indicated heat distortion temperature, with unit of deg C.

(4) Izod impact strength

Following to ASTM standard D-256, it executed 1/8 "notched impact test of ASTM D-256 making use of impact test piece which it drew up.

It indicated Izod impact strength, with unit of kg*cm/cm.

(5) external appearance

molded article was observed with visual.

evaluation depended on following standard.

As for namely, * satisfactory, as for 0 satisfactory, as for X deficiency is shown very.

(6) flexural modulus

Following to ASTM standard D-790, it executed bending test of ASTMD-790 making use of flexural test piece which it drew up.

It indicated flexural modulus, with unit of kg/cm^2 .

[0032]

In each Working Example or Comparative Example below, raw material which is used is below-mentioned sort.

(7) polycarbonate resin (Below PC it states.), Mitsubishi Engineering Plastics Corp. (DB 69-164-9669) make, tradename IupilonS-3000, viscosity average molecular weight22,000*

(8) polysiloxane-polycarbonate copolymer-1 (Below SiPC-1 it states.), polycarbonate-organopolysiloxane copolymer where quantity of poly dimethylsiloxane is 15 weight% of copolymer entirety (As for silicon content 5.25 weight%), viscosity average molecular weight 22,000*

(9) polysiloxane-polycarbonate copolymer-2 (Below SiPC-2 it states.), polycarbonate-organopolysiloxane copolymer where quantity of poly dimethylsiloxane is 5 weight% of copolymer entirety (As for silicon content 1.75 weight%), viscosity average molecular weight 22,000*

(10) phosphate ester-based compound-1 (Below phosphate ester-1 it states.), condensed phosphate ester, Daihachi Chemical Industry Co. Ltd. (DN 69-072-8662) make, tradenamePX-200*

(11) phosphate ester-based compound-2 (Below phosphate ester-2 it states.), triphenyl phosphate, Daihachi Chemical Industry Co. Ltd. (DN 69-072-8662) make, tradename TPP*

polytetrafluoroethylene (Below PTFE it states.)
polytetrafluoroethylene, Daikin Industries Ltd. which
possesses (12) fibril-forming ability (DB 69-054-0356) make,
tradename PolyflonF201L*

(13) ABS resin (Below ABS it states.), Mitsui Toatsu Chemicals Inc. (DB 69-053-6982) make, tradename SantacET-70*

[0033]

After mixing each component which is stated in { Working Example1~5 and Comparative Example1~5 } Table 1, Table 2, with the proportion of same listed, 40 mm diameter single screw extruder (Isuzu Kako Co., Ltd. make) were used, extrusion it did with cylinder temperature 250 deg C and pelletizing did.

With cylinder temperature 270 deg C, die temperature 80 deg C, designated test piece it formed pellet which it acquires. 6

deg C 80 deg C

hours after drying, making use of injection molding machine (The Japan Steel Works Ltd. (DB 69-056-8472) Ltd. make, tradenameJ-50EP) with 120 deg C.

-1 -2

composition and property evaluation result of pellet, were shown in Table 1 and Table 2.

0034

[0034]

1

[Table 1]

表 - 1

	実施例-1	実施例-2	実施例-3	実施例-4	実施例-5
(A)PC	82	94	94	94	92
(B)SiPC-1		6	6	6	8
SiPC-2	18				
(C)リン酸エステル-1	2	2		0.5	2
リン酸エステル-2			2		
(D)PTFE	0.5	0.5	0.5	2	0.5
燃焼性	V-0	V-0	V-0	V-0	V-0
燃焼時間	20	20	20	32	18
荷重たわみ温度	129	129	126	134	120
衝撃強度	74	74	70	78	72
外観	◎	◎	◎	◎	○
曲げ弾性率	23,000	23,000	23,000	22,400	22,600

0035

[0035]

2

[Table 2]

表 - 2

	比較例-1	比較例-2	比較例-3	比較例-4	比較例-5
(A)PC	100	100	94	94	67
(B)SiPC-1			6	6	33
(C)リン酸エステル-1	2	2	0.05	10	2.5
(D)PTFE	0.5	0.5	3	0.04	0.04
(E)ABS		3			
燃焼性	V-0	V-1	V-1	V-2	V-0
燃焼時間	28	52	56	37	28
荷重たわみ温度	130	129	135	108	118
衝撃強度	11	19	79	5	78
外観	◎	◎	×	◎	×
曲げ弾性率	23,900	23,600	21,900	26,300	19,100

0036

[0036]

[Effects of the Invention]

polycarbonate resin composition of this invention is superior in flame resistance, impact resistance, stiffness, heat resistance, at same time weare superior even in external appearance, it is very useful as material of the electronic and electric appliances, OAEquipment or other housing or sash

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application, various part.